## Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application.

## **Listing of Claims**

- 1. (Previously Presented) An isolated polynucleotide comprising a member selected from the group consisting of:
- (a) a polynucleotide encoding a polypeptide having the deduced amino acid sequence of SEQ ID NO:4 or a fragment of said polypeptide;
- (b) a polynucleotide encoding a polypeptide having the amino acid sequence encoded by the cDNA contained in ATCC Deposit No. 75649;
- (c) a polynucleotide encoding a polypeptide having the deduced amino acid sequence of SEQ ID NO:4 or a fragment of said polypeptide;
- (d) a polynucleotide encoding a polypeptide having the amino acid sequence encoded by the cDNA contained in ATCC Deposit No. 75651;
- (e) a polynucleotide encoding a polypeptide having the deduced amino acid sequence of SEQ ID NO:6 or a fragment of said polypeptide; and
- (f) a polynucleotide encoding a polypeptide having the amino acid sequence encoded by the cDNA contained in ATCC Deposit No. 75650.
- 2. (Original) The polynucleotide of Claim 1 wherein the polynucleotide is DNA.
- 3. (Previously Presented) The polynucleotide of Claim 1 wherein said polynucleotide encodes a polypeptide having the deduced amino acid sequence of SEQ ID NO:4.
- 4. (Original) The polynucleotide of Claim 1 wherein said polynucleotide encodes a polypeptide having the deduced amino acid sequence of SEQ ID NO:4.

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- (Original) The polynucleotide of Claim 1 wherein said polynucleotide encodes a polypeptide having the deduced amino acid sequence of SEQ ID NO:6.
- 6. (Original) The polynucleotide of Claim I wherein said polynucleotide encodes a polypeptide encoded by the cDNA of ATCC Deposit No. 75649.
- 7. (Original) The polynucleotide of Claim 1 wherein said polynucleotide encodes a polypeptide encoded by the cDNA of ATCC Deposit No. 75651.
- 8. (Original) The polynucleotide of Claim 1 wherein said polynucleotide encodes a polypeptide encoded by the cDNA of ATCC Deposit No. 75650.
  - 9. (Original) A vector containing the polynucleotide of Claim 1.
  - 10. (Original) A host cell genetically engineered with the vector of Claim 9.
- 11. (Original) A process for producing a polypeptide comprising expressing from the host cell of Claim 10 the polypeptide encoded by said DNA.
- 12. (Original) A process for producing cells capable of expressing a polypeptide comprising genetically engineering cells with the vector of Claim 9.
- 13. (Previously Presented) A polypeptide comprising a member selected from the group consisting of:
- (a) a polypeptide having the deduced amino acid sequence of SEQ ID NO:4 and fragments thereof;
- (b) a polypeptide encoded by the cDNA of ATCC Deposit No. 75649 and fragments of said polypeptide;
- (c) a polypeptide having the deduced amino acid sequence of SEQ ID NO:4 and fragments thereof,
- (d) a polypeptide encoded by the cDNA of ATCC Deposit No. 75651 and fragments of said polypeptide;

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- (e) a polypeptide having the deduced amino acid sequence of SEQ ID NO:6 and fragments thereof; and
- (f) a polypeptide encoded by the cDNA of ATCC Deposit No. 75650 and fragments of said polypeptide.

## 14. (Cancelled)

15. (Previously Presented) The polynucleotide sequence of claim 1 for use in analyzing a sample for mutation of a polynucleotide sequence encoding a human mismatch repair protein comprising:

a polynucleotide sequence of at least 15 and no more than 30 consecutive bases of the polynucleotide sequence of ATCC Deposit No. 75649.

16. (Previously Presented) The polynucleotide sequence of claim 1 for use in analyzing a sample for mutation of a polynucleotide sequence encoding a human mismatch repair protein comprising:

a polynucleotide sequence of at least 15 and no more than 30 consecutive bases of the polynucleotide sequence of ATCC Deposit No. 75651.

17. (Previously Presented) The polynucleotide sequence of claim 1 for use in analyzing a sample for mutation of a polynucleotide sequence encoding a human mismatch repair protein comprising:

a polynucleotide sequence of at least 15 and no more than 30 consecutive bases of the polynucleotide sequence of ATCC Deposit No. 75650.

18. (Previously Presented) A process for diagnosing a susceptibility to cancer comprising:

assaying a sample derived from a human to determine a mutation in a human mismatch repair gene, said human mismatch repair gene comprising the polynucleotide sequence of claim 6.

19. (Previously Presented) A process for diagnosing a susceptibility to cancer comprising:

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determining from a sample derived from a human patient a mutation in a human mismatch repair gene, said human mismatch repair gene comprising the DNA of claim 7.

20. (Previously Presented) A process for diagnosing a susceptibility to cancer comprising:

determining from a sample derived from a human patient a mutation in a human mismatch repair gene, said human mismatch repair gene comprising the DNA of claim 8.

21. (Previously Presented) A process for diagnosing a susceptibility to cancer comprising:

determining from a sample derived from a human patient a mutation in the polynucleotide of claim 1.

- 22. (Previously Presented) An isolated antibody or fragment thereof that specifically binds to a protein selected from the group consisting of:
  - (a) a protein consisting of amino acid residues 1 to 932 of SEQ ID NO:4;
- (b) a protein consisting of a portion of SEQ ID NO:4, wherein said portion comprises at least 30 contiguous amino acid residues of SEQ ID NO:4; and
- (c) a protein consisting of a portion of SEQ ID NO:4, wherein said portion comprises at least 50 configuous amino acid residues of SEQ ID NO:4.
- 23. (Previously Presented) The antibody or fragment thereof of claim 22 that specifically binds protein (a).
- 24. (Previously Presented) The antibody or fragment thereof of claim 22 that specifically binds protein (b).
- 25. (Previously Presented) The antibody or fragment thereof of claim 22 that specifically binds protein (c).
- 26. (Previously Presented) The antibody or fragment thereof of claim 23 that specifically binds protein (b).

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- 27. (Previously Presented) The antibody or fragment thereof of claim 23 wherein said protein bound by said antibody or fragment thereof is glycosylated.
- 28. (Previously Presented) The antibody or fragment thereof of claim 23 which is a human antibody.
- 29. (Previously Presented) The antibody or fragment thereof of claim 23 which is a polyclonal antibody.
- 30. (Previously Presented) The antibody or fragment thereof of claim 23 which is selected from the group consisting of:
  - (a) a chimeric antibody;
  - (b) a humanized antibody;
  - (c) a single chain antibody; and
  - (d) a Fab fragment.
- 31. (Previously Presented) The antibody or fragment thereof of claim 23 which is labeled.
- 32. (Previously Presented) The antibody or fragment thereof of claim 23 wherein said antibody or fragment thereof specifically binds to said protein in a Western Blot.
- 33. (Previously Presented) An isolated cell that produces the antibody or fragment thereof of claim 23.
- 34. (Previously Presented) A hybridoma that produces the antibody or fragment thereof of claim 23.
- 35. (Previously Presented) A method of detecting hMLH2 protein in a biological sample comprising:
- (a) contacting the biological sample with the antibody or fragment thereof of claim 23; and
  - (b) detecting the hMLH2 protein in the biological sample.

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fragment thereof is a polyclonal antibody.

- 37. (Previously Presented) An isolated antibody or fragment thereof obtained from an animal that has been immunized with a protein selected from the group consisting of:
- (a) a protein comprising the amino acid sequence of amino acid residues 1 to 932 of SEQ ID NO:4;
- (b) a protein comprising the amino acid sequence of at least 30 contiguous amino acid residues of SEQ ID NO:4; and
- (c) a protein comprising the amino acid sequence of at least 50 contiguous amino acid residues of SEQ ID NO:4;

wherein said antibody or fragment thereof specifically binds to said amino acid sequence.

- 38. (Previously Presented) The antibody or fragment thereof of claim 37 obtained from an animal immunized with protein (a).
- 39. (Previously Presented) The antibody or fragment thereof of claim 37 obtained from an animal immunized with protein (b).
- 40. (Previously Presented) The antibody or fragment thereof of claim 37 obtained from an animal immunized with protein (c).
- 41. (Previously Presented) The antibody or fragment thereof of claim 37 which is a monoclonal antibody.
- 42. (Previously Presented) The antibody or fragment thereof of claim 37 which is selected from the group consisting of:
  - (a) a chimeric antibody;
  - (b) a polyclonal antibody;
  - (c) a humanized antibody;
  - (d) a single chain antibody; and
  - (e) a Fab fragment.

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- 43. (Previously Presented) An isolated monoclonal antibody or fragment thereof that specifically binds to a protein selected from the group consisting of:
  - (a) a protein consisting of amino acid residues 1 to 932 of SEQ ID NO:4;
- (b) a protein consisting of a portion of SEQ ID NO:4, wherein said portion comprises at least 30 contiguous amino acid residues of SEQ ID NO:4; and
- (c) a protein consisting of a portion of SEQ ID NO:4, wherein said portion comprises at least 50 contiguous amino acid residues of SEQ ID NO:4.
- 44. (Previously Presented) The antibody or fragment thereof of claim 43 that specifically binds protein (a).
- 45. (Previously Presented) The antibody or fragment thereof of claim 43 that specifically binds protein (b).
- 46. (Previously Presented) The antibody or fragment thereof of claim 43 that specifically binds protein (c).
- 47. (Previously Presented) The antibody or fragment thereof of claim 44 that specifically binds protein (b).
- 48. (Previously Presented) The antibody or fragment thereof of claim 44 wherein said protein bound by said antibody or fragment thereof is glycosylated.
- 49. (Previously Presented) The antibody or fragment thereof of claim 44 which is a human antibody.
- 50. (Previously Presented) The antibody or fragment thereof of claim 44 which is selected from the group consisting of:
  - (a) a chimeric antibody;
  - (b) a humanized antibody;
  - (c) a single chain antibody; and
  - (d) a Fab fragment.

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- 51. (Previously Presented) The antibody or fragment thereof of claim 44 which is labeled.
- 52. (Previously Presented) The antibody or fragment thereof of claim 44 wherein said antibody or fragment thereof specifically binds to said protein in a Western blot.
- 53. (Previously Presented) An isolated cell that produces the antibody or fragment thereof of claim 44.
- 54. (Previously Presented) A hybridoma that produces the antibody or fragment thereof of claim 44.
- 55. (Previously Presented) A method of detecting hMLH2 protein in a biological sample comprising:
- (a) contacting the biological sample with the antibody or fragment thereof of claim 45; and
  - (b) detecting the hMLH2 protein in the biological sample.
- 56. (Previously Presented) An isolated antibody or fragment thereof that specifically binds an hMLH2 protein expressed in a cell or an hMLH2 protein purified from a cell culture wherein said hMLH2 protein is encoded by a polynucleotide encoding amino acids 1 to 932 of SEQ ID NO:4 operably associated with a regulatory sequence that controls the expression of said polynucleotide.
- 57. (Previously Presented) The antibody or fragment thereof of claim 56 which is a monoclonal antibody.
- 58. (Previously Presented) The antibody or fragment thereof of claim 56 which is a human antibody.
- 59. (Previously Presented) The antibody or fragment thereof of claim 56 which is selected from the group consisting of:
  - (a) a chimeric antibody;
  - (b) a polyclonal antibody;

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- (c) a humanized antibody;
- a single chain antibody; and **(þ)**
- a Fab fragment. (e)
- 60. (Previously Presented) The antibody or fragment thereof of claim 56 wherein said antibody or fragment thereof specifically binds to said protein in a Western blot.